The Use of Research Methodologies in the Knowledge Management Literature

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ABSTRACT
The texts of 630 knowledge management articles were analyzed to address the question of what research methodologies are used in the knowledge management literature. It was found that 27.8 percent of knowledge management-related articles in knowledge management journals used no identifiable research method. Of the remaining 455 refereed articles, 60 percent employed mainstream social sciences research methodologies. The remaining 40 percent of the articles using an identifiable methodology were characterized by the use of “provisional methods” that appeared to substitute for more formally defined or scientifically based research methodologies.

Keywords
Knowledge management, research methods, professional literature, professions.

RESEARCH AND PROFESSIONS
The Nature of Professions
The nature of professions has been discussed and studied at least since the beginning of the nineteenth century. One of the earliest detailed expositions was Flexner’s discussion of social work as a profession (1915). One of the most cogent and comprehensive analyses was provided by Pavalko (1988), who identified seven essential characteristics of a profession:

1. A theory of intellectual technique.
2. Relevance to basic social values.
3. A training period.
5. Autonomy.
6. Commitment.
7. A sense of community (pp. 20-27).

The nature of professions has also been explored by Abbott (1988) and others.

Knowledge Management as a Profession
The extent to which knowledge management as a field has developed a professional identity is subject to interpretation and argument. As Wallace (2007, pp. 224-225) noted, knowledge management has to date not developed any meaningful or central sense of self-reflection suggestive of widespread concern about professionalism. Wallace suggested that knowledge management is currently very uneven in terms of compliance with Pavalko’s seven criteria.

A variation on the concept of a profession is that of a professional discipline. Squires (2001) defined a professional discipline in terms of 1) its impact on society, 2) decisions and actions based on analysis of uncertain circumstances, and 3) the use of techniques and rules to guide action (p. 473). Grossman and Hooton (1993) argued that the members of a professional discipline act as the “educational custodians of the discipline,” in part by controlling the literature of the profession (p. 871). Wallace suggested that, whatever the status of knowledge management as a profession, knowledge management has not emerged as a professional discipline, particularly with regard to the scholarly status of the knowledge management literature (1915, p. 225).

Knowledge Management and Scholarship
One of the characteristics that are frequently attributed to a profession is the development of a systematic body of scholarship underpinned by research. It is unclear that any such systematic body of research-based scholarship has emerged for knowledge management as a professional discipline or field. This is the embodiment of Pavalko’s “theory of intellectual technique” (1988, p. 20) and is reflected in Flexner’s contention that “A profession must find a dignified and critical means of expressing itself in the form of a periodical which shall describe in careful terms whatever work is in progress; and it must from time to time register its more impressive performances in a literature of growing solidity and variety” (p. 588).

The literature of knowledge management is scattered and varied, ranging from volumes of short notes on practice to a
handful of scholarly journals dedicated to knowledge management and articles on knowledge management topics in journals not exclusively devoted to knowledge management. According to Wallace, “Much of what has been published is exhortatory in nature, encouraging the adoption of knowledge management as an overall organizational philosophy or the incorporation into organizational operations of certain aspects of knowledge management such as the transfer of tacit knowledge or the development of content management systems” (p. 221).

DEFINITIONAL ISSUES
Schultze and Stabell (2004) noted that “Defining knowledge management research is challenging because a complete and agreed-upon definition of knowledge remains elusive” (p. 551). Kane, Ragsdell, and Oppenheim (2006) echoed this concern and quoted a number of prominent, sometimes overlapping, sometimes conflicting definitions of knowledge in the knowledge management context (p. 141).

Easton and Araujo (1997) suggested that “the field of management studies may be regarded as an artistic enterprise” rather than a scientific discipline and proposed the use of literary criticism techniques as an approach to management research (p. 99). In the same issue of the British Journal of Management in which Easton and Araujo’s article appeared, Linstead (1997) argued in favor of social anthropology as a platform for increased interdisciplinarity in management research.

THEORETICAL FOUNDATIONS OF KNOWLEDGE MANAGEMENT
Baskerville and Dulipovici (2006) explored the “flow and use” of theoretical concepts in knowledge management, identifying eight broadly defined critical influences:

1. Information economics.
2. Strategic management.
3. Organizational culture.
4. Organizational structure.
5. Organizational behavior.
6. Artificial intelligence.
7. Quality management.
8. Organizational performance management (p. 87).

Baskerville and Dulipovici further subdivided each of these broad areas into more specific theoretical frameworks, but did not explicitly ground their model in a systematic analysis of the knowledge management literature. The result is a largely speculative, albeit highly useful, model of the theoretical structure of knowledge management.

Jashapara (2005) presented a visual model of an “integrative framework of knowledge management” that closely parallels but does not duplicate the model presented by Baskerville and Dulipovici (p. 141). Jashapara’s model is presented in Figure 1.

Figure 1: Jashapara’s Visual Model of Knowledge Management

PROPOSED RESEARCH AGENDAS
There have been several proposed agendas for research in knowledge management, one of which seems to have actually served as a driver for knowledge management research. One of the first sets of targets for knowledge management research was presented by Teece in 1998. Teece called for research activities designed to:

- Assemble evidence to test the proposition that firm-level competitive advantage in open economies flows fundamentally from difficult to replicate knowledge assets.
- Make greater effort to quantify the value of intangible assets.
- Understand generic inputs, idiosyncratic inputs, and profitability (pp. 289-292).

Alavi and Leidner (2001) provided an extensive knowledge management research agenda centered around five essential research questions:

1. What conditions facilitate knowledge creation in organizations?
2. What incentives are effective in encouraging knowledge contribution and sharing in organizations?
3. How can knowledge be effectively transferred among organizational units?
4. How can an organization encourage application of knowledge that is made available?
5. What are the consequences of increasing the breadth and depth of available knowledge, via information technology, on organizational performance? (p. 127).

Gulati (2007) commented on the regrettable gap between perceptions of rigor and perceptions of relevance in the management literature and suggested a five-step agenda for achieving better integration of the literature:
1. Rely on managerial sensibility to shape research questions.
2. Test theory in the classroom.
3. Build theory.
4. Appreciate—and synthesize—the dialectic between theory and phenomenon.
5. Become “bilingual interpreters” for and active collaborators with practitioners (pp. 780-781).

Desouza (2004) called for knowledge management research to improve itself by addressing four fundamental actions:

1. “Integrate the research on knowledge management with the extant work in other functional areas such as accounting, finance, marketing, innovation, research & development, and production and operations management.”
2. Explore “how can we secure our existing knowledge assets.”
3. “Conduct research that links success in knowledge management to organizational outcomes.”
4. Document and publish “practitioner based knowledge management novelties” (pp. 2-4).

**LITERATURE ANALYSES**

Scandura and Williams (2000) examined research trends in management by comparing all articles published in the *Academy of Management Journal, Administrative Science Quarterly*, and the *Journal of Management* during a three-year period in the 1980s to articles written during a comparable three-year period in the 1990s. They used McGrath’s taxonomy of research strategies as an approach to classifying 347 articles that employed some mixture of “theory/literature reviews and/or empirical data” (p. 1254). Their results are presented in Table 1, which is drawn directly from their article.

**Triangulation: Research Strategies**

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<tr>
<td>Formal theory/literature review</td>
<td>22.90 %</td>
<td>18.70 %</td>
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<tr>
<td>Sample survey</td>
<td>6.90</td>
<td>3.60</td>
</tr>
<tr>
<td>Laboratory experiment</td>
<td>10.70</td>
<td>4.90</td>
</tr>
<tr>
<td>Experimental simulation</td>
<td>0.60</td>
<td>1.70</td>
</tr>
<tr>
<td>Field study</td>
<td></td>
<td></td>
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<tr>
<td>Primary</td>
<td>38.00</td>
<td>40.90</td>
</tr>
<tr>
<td>Secondary</td>
<td>16.10</td>
<td>26.60</td>
</tr>
<tr>
<td>Field experiment</td>
<td>3.90</td>
<td>2.20</td>
</tr>
<tr>
<td>Judgment task</td>
<td>0.60</td>
<td>0.20</td>
</tr>
<tr>
<td>Computer simulation</td>
<td>0.30</td>
<td>1.20</td>
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**Table 1: Scandura and Williams’s Typology of Management Research Strategies**

Scandura and Williams found that field studies dominated in both time periods and that there were significant changes for sample surveys, laboratory experiments, and field studies employing secondary data (p. 1256). They concluded that the shifts that had taken place were potentially of a negative nature and involved compromises to triangulation and validity.

Schultze and Leidner (2002) examined ninety-four articles related to information systems research from six journals selected to “review academic research that represents a diversity of epistemological assumptions” (p. 218). Their analysis focused on the congruence between the content of the articles and Deetz’s taxonomy of discourses in organization science, which divides research into four areas of discourse: dialogic, critical, interpretive, and normative. They found that a distinct majority of the articles were reflective of the normative discourse model, that a meaningful number of articles were characterizable as interpretive discourse, and that only three articles fell into the combined dialogic discourse/critical discourse domain (p. 220). Schultze and Leidner concluded that knowledge management literature, as represented in the sample examined, is biased toward optimistic, consensus oriented research approaches and that “the negative consequences of information technologies on organizational learning, namely its disciplining and dominating effects, are left largely unexamined” (p. 230). Schultze and Stabell (2004) attempted to build a theoretical model that would extend their explanation of Deetz’s model and expand the role of the concept of discourse by reframing the four discourse areas as neo-functionalist, constructivist, critical, and dialogic discourse (566).

Karami, Rowley, and Analoui (2006) described the historical development of research methods in management studies as having its origins in the positivist mode, with an early emphasis on case studies, a later transition to primarily empirical explorations, and a much more recent and somewhat tentative infusion of phenomenological and qualitative methods (pp. 44-46). Their study of 120 articles in twenty leading management journals examined twenty-three very broadly defined factors associated with choice of research methodology. Many of these factors, such as “simple random sampling” and “used means, standard deviations or similar,” cannot really be considered to be methods so much as tools. With those tools eliminated, they found the most frequently used methodological areas to be questionnaire-based descriptive research (69 percent of the articles studied), “grand theory” (50 percent), case study (40 percent), interview (38 percent), and “participatory or action research” (20 percent). Some articles used more than one methodological area, resulting a total substantially greater than 100 percent.

Kane, Ragsdell, and Oppenheim (2006), in an article that conforms to the provisional methodology termed an analytical literature review in the present study, commented that “It would appear that researchers may explicitly or implicitly state their methodological stance but subsequently appear to have difficulty in implementing the
methodology in their primary research. Secondly, the methodological stance is not always evident, which may result in criticism that the research position is ambiguous and, therefore, problematic for others in the research community to construct a possible stance by piecing together aspects of the data collection and analysis in an effort to ‘assemble’ a possible methodology” (p. 143). Kane, Ragsdell, and Oppenheim offered a number of examples of the use of various research methodologies in knowledge management, but made no attempt to quantify or assess the relative importance of the methodologies identified.

Bjørnson and Singsøyr (2008) examined sixty-eight articles focused on the intersection of knowledge and software engineering. They found that twenty-nine articles (43 percent) were reports of empirical research projects, while thirty-nine (57 percent) were reports of “lessons learned” (p. 1059). Their results revealed no clear pattern over time that defines the balance of empirical and lessons learned approaches, although there was some indication of growth in the numbers of empirical articles between 2003 and 2006, the final year for which articles were studied (p. 1060).

Guo and Sheffield (2008) set about “to examine the KM theoretical perspectives, research paradigms, and research methods reported in influential journals in order to see what they tell us about KM research as a whole” with a specific goal of determining whether “KM research in information systems and/or management journals employs paradigms and methods that are broad enough to capture the full range of theoretical perspectives — utility, human agency, and power relations” (pp. 674-675). They developed a systematic approach to categorizing knowledge management research articles, which they applied to 160 articles drawn from ten “first-tier” journals (p. 680). Their findings revealed that about 75 percent of the articles were empirical in nature and that 77 percent conformed to the positivist paradigm (p. 681). They indicated that “analysis of all articles (empirical and nonempirical) by research method shows that sample survey occurs most frequently, followed by field study, theory building, and literature review” (p. 682).

RESEARCH QUESTION

The study presented here was designed to address a very straightforward research question: What methodologies are used in the research literature of knowledge management? The goal was to explore the use of research methodologies in the knowledge management literature in a systematic, comprehensive, quantitative manner by examining a broad cross-section of the knowledge management journal literature.

METHODOLOGY

Basic Methodology

The basic methodological approach selected for the study was a content analysis of the full-texts of articles provisionally identified as being relevant to knowledge management.

Journal Selection

The study was designed to explore the research methodologies used in the twenty journals of greatest importance to the knowledge management literature. Two interpretations of importance were implemented: 1) a journal can be assumed to be important to knowledge management if the title of journal explicitly includes the expression “knowledge management,” and 2) a journal can be assumed to be important to knowledge management if it is highly cited by the knowledge management literature. Journals to be included in the study were therefore selected using two strategies.

1. A search of Ulrich’s International Periodicals Directory online (Ulrichsweb) was conducted to identify all refereed journals with the expression “knowledge management” in the title. Only those journals for which full texts were available digitally were selected for the study. The search yielded nine titles:

- Electronic Journal of Knowledge Management.
- Information, Knowledge, Systems Management.
- Interdisciplinary Journal of Information, Knowledge, and Management.
- Journal of Information and Knowledge Management.
- Journal of Knowledge Management.
- Knowledge Management for Development Journal.
- Knowledge Management Research & Practice.
- Knowledge and Process Management.
- Knowledge Management Review.

2. A search of Social Sciences Citation Index (Social Scisearch) was conducted in Dialog using the keyword expression “knowledge management.” This yielded 1,067 articles that could reasonably be assumed to be in some way related to the topic knowledge management. The references from all of the articles were then captured, yielding 39,654 references from a total of 2,771 source publications. The source publications were ranked by number of references per source publication and the top eleven journals were identified for inclusion in the study. Again, only those journals for which full texts were available digitally were selected for the study. The top eleven journals for which digital full text was available, in order of descending productivity, were:

- Strategic Management Journal.
- Harvard Business Review.
- California Management Review.
- Academy of Management Review.
• Administrative Science Quarterly.
• Management Science.
• MIT Sloan Management Review.
• MIS Quarterly.
• Journal of Management Information Systems.
• Academy of Management Journal.
• Communications of the ACM.

The combination of these two strategies identified twenty journals that became the source of data for the study.

Research Procedure
Once the twenty source journals were identified, the full texts of all articles published for the three-year period 2006 through 2008 were retrieved. This process identified 3,037 articles. A two-pass content analysis was used to identify a final body of articles for analysis. The content analysis was carried out independently by two individuals and results were then reconciled by the principal researcher.

Although the journals identified by capturing references from articles returned from the Social Sciences Citation Index search were cited by articles including the keyword expression “knowledge management,” many of those journals do not concentrate on publishing knowledge management research and could reasonably be expected to contain articles having nothing to do with knowledge management. The first pass content analysis was conducted to remove articles that did not appear to legitimately deal with knowledge management topics. Six hundred-thirty of the 3,307 articles (21 percent) were judged to be about knowledge management topics.

A second pass content analysis identified articles that did not have an identifiable research methodology. The second pass identified 175 articles (28 percent) that had no identifiable research methodology and 455 (72 percent) that had at least a provisionally identifiable research methodology. Table 3 provides a frequency breakdown for the identified methodologies.

<table>
<thead>
<tr>
<th>Method</th>
<th>Number of KM Articles</th>
<th>Percent of KM Articles</th>
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<tbody>
<tr>
<td>Case study</td>
<td>122</td>
<td>26.8</td>
</tr>
<tr>
<td>Survey/questionnaire</td>
<td>77</td>
<td>16.9</td>
</tr>
<tr>
<td>Literature review</td>
<td>70</td>
<td>15.4</td>
</tr>
<tr>
<td>Framework</td>
<td>66</td>
<td>14.5</td>
</tr>
<tr>
<td>Interview</td>
<td>54</td>
<td>11.9</td>
</tr>
<tr>
<td>Mathematical model</td>
<td>22</td>
<td>4.8</td>
</tr>
<tr>
<td>Content analysis</td>
<td>12</td>
<td>2.6</td>
</tr>
<tr>
<td>Field study</td>
<td>8</td>
<td>1.8</td>
</tr>
<tr>
<td>Nineteen additional methods</td>
<td>24</td>
<td>5.3</td>
</tr>
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</table>

Table 3: Most Used Research Methodologies

DISCUSSION
Non-research Articles
The most striking result of this study is that more than a quarter of knowledge management-related articles published in refereed journals employed no identifiable research methodology. This echoes the findings of Bjornson and Singsoyr (2008) and of Guo and Sheffield (2008). The articles for which no research methodology could be identified were primarily expositions of expert opinion, expository literature reviews, and summaries of practice.

Articles Employing Social Science Research Methods
Two hundred seventy-three (60 percent) of the articles for which research methodologies were identified were reflective of typical social sciences research. Systematic case study, as distinguished from less formal summaries of practice, accounted for 26.8 percent of research articles; although an explicit count of qualitative vs. quantitative case studies was not conducted, there were clearly more qualitative than quantitative case studies. Survey and questionnaire research was the focus of 16.9 percent of the articles. Surveys tended to be rather informal and most involved very small populations or convenience sampling. Interview research, also generally somewhat informal and based on convenience sampling, accounted for 11.9 percent of the research articles. Content analysis was used in 2.6 percent of the articles, while 1.8 percent were reports of field studies. An additional 5.3 percent of the articles used a total of nineteen other social sciences research methods.

Table 2 lists the frequencies of knowledge management articles contributed by the ten most productive journals. The remaining ten journals contributed only 10.9 percent of the articles. Not surprisingly, journals dedicated to knowledge management were the most productive, although the interdisciplinary nature of knowledge management is reflected in the inclusion of MIS Quarterly, Management Science, and Journal of Management Information Systems in the top ten.
Provisional Research Methods

An additional 182 articles (40 percent) were considered to have “provisional” research methods. It was clear from examination of these articles that the approaches, techniques, and tools employed were intended to serve as research methods, even though they did not meet typical criteria for formal research methods.

The most frequent of these provisional research methods were extensive, analytical literature reviews that served a more-or-less historical or exploratory function. Although these literature reviews did not constitute true historical studies, their intent was clearly to yield understanding of the origins and evolution of ideas, concepts, tools, and institutions central to the development of knowledge management principles and knowledge management practice. Seventy articles (15.4 percent) fell into this category.

The remaining 88 articles used visualization as a substitute for more formal social sciences research methods. Seventy of these were graphic representations of institutions, systems, and processes. In some cases, these took the form of traditional organizational charts, process charts, flow charts, GANTT charts, or other standard graphic depictions. Most, however, were unique visualizations that tended to focus on processes and flows not easily depicted with more standard tools. Among the most frequently used visual tools were knowledge maps, relationship diagrams, and multi-part linear flow diagrams.

Pojasek, Garn, J & Papadopoulos (2001) discussed the role of visualization in leveraging knowledge capital in organizations. They identified the core benefit of visualization: “Once a visual context process has been completed, members of the organization can interact together in a commonly defined context with the information that forms our individual perspectives” (p. 85). This is a concise summarization of the apparent motive for the extensive use of visualization as a surrogate for research methods in the knowledge management literature. There appears to be a widespread acceptance of the principle that words accompanied by pictures can tell stories more effectively than words alone.

A further twenty-two articles presented mathematical models as a form of explanatory mechanism. These models tended to be fairly simplistic in comparison to the mathematical models that appear in journals in information science, computer science, engineering, and related areas.

Conclusions

This study was designed to explore the nature of the research methodologies employed in the knowledge management literature. Two prominent conclusions can be drawn from this analysis:

First, empirical research using established social sciences research methods is clearly not the dominant focus for articles in refereed journals in knowledge management. Of the 630 articles determined to be relevant to knowledge management, only 34.8 percent used typical social sciences research methods. Furthermore, 27.8 percent did not use any identifiable research methodology, implying that the standard for scholarship in refereed knowledge management journals is not directly based on research.

Second, the knowledge management literature appears to employ an alternative to or surrogate for traditional social sciences research methods that emphasizes detailed analyses of prior literature as a substitute for historical methods and visual modeling as a substitute for quantitative and qualitative methods.

Implications For Future Research

These conclusions suggest that not only is the literature of knowledge management relatively immature methodologically but that the literature may be evolving in a direction that distinguishes it from other literatures. Two implications for future research action emerge from this analysis and the conclusions drawn from it:

1. There is a need to revisit the analysis here to determine if the nature of scholarship in knowledge management continues to evolve in a seemingly new direction or moves toward conformity with standard social sciences research methodologies. The dominance of what have been termed here provisional methodologies may be a development fluke that will disappear as the literature matures, but may indeed be an indicator of a permanent distinguishing focus for the knowledge management literature. Such a permanent focus might very well lead to a need to reconsider the role of scholarship in professions and the nature of professional disciplines.

2. It would be instructive to compare the pattern of research methods use in the knowledge management literature to that of other professions or professional disciplines such as management, library and information science, and computer science to determine whether there is indeed a unique pattern that characterizes the knowledge management literature. Applying the methodology employed in this study to other professional literatures has substantial potential for furthering understanding of the commonalities and individualities of the roles played by research methods in scholarly literatures.

References


